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A Survey of Pregnancy Toxaemia and Allied Disorder in North Wales—Winter, 1955

BY

D. T. MICHAEL

Ministry of Agriculture, Fisheries and Food, Ruthin, Denbighshire

WITHIN the province of North Wales it is sometimes difficult to determine critical differences of history and management between flocks remaining free from pregnancy toxaemia and those in which this disorder is recorded. Among the anomalies encountered in the field are those in which flocks treated most casually remain healthy whilst others in the vicinity, given what is regarded as better care and attention, experience the disorder. In attempting to find an explanation for this it is necessary to remember that some degree of unobtrusiveness masks the husbandry of the truly proficient. This is neither easy to detect nor easy to interpret.

This survey is presented with a realisation of its imperfections: throughout the work the greatest variable remains unassessed—namely, the human factor as it affects daily management—and comparatively few flocks were visited during the period when the disorder was occurring. Many of the factors involved in the aetiology of pregnancy toxaemia are closely interrelated, but in this survey they are treated independently and include breeding policy, time of lambing, supplementary feeding and methods of feeding, shelter, and condition of ewes.

Method and Materials

Data were obtained during visits of inspection, and the failure of past attempts to correlate clinical findings with biochemical status prompts the term "pregnancy toxaemia and allied disorder." Fifty-eight cases were examined clinically; in other cases the diagnoses were based on the reports of the owners and whenever possible on the reports of their own veterinarian. These reports were considered reliable because, unfortunately, this is no new disorder to those engaged in the management of these flocks. Accidental losses arising from snow were eliminated.

Flocks carrying Welsh ewes, and representing a fair sample within the counties of Denbigh, Merioneth and Montgomery, included those of hill, upland and lowland farms; all farms carried attested cattle. Lowland farms were managed separately or in conjunction with a hill farm, but in each case breeding ewes were obtained in the autumn from hill flocks, and replaced annually or at longer intervals for the production of fat lambs. When run in conjunction with a hill farm, ewes from the hill flock were grazed temporarily on the lowland pastures. Upland farms carried a "flying flock" on similar lines or, alternatively, a breeding flock was maintained. Hill farms operated as a complete unit or in co-operation with the parent lowland farm. Situated at a higher elevation, the hill farm exploits the natural resources of contiguous hill grazings, and on such farms some land is enclosed, thus affording varying types of pasture. Flocks wintering throughout on true hill grazings are excluded from this survey.

Factors Involved in the Aetiology of Pregnancy Toxaemia

Breeding Policy. One of the reasons propounded for the apparent increase of pregnancy toxaemia compared with that of pre-war years is the change of breeding policy: to-day rams of larger breeds, *e.g.*, Clun, Kerry, Suffolk and Wiltshire, are selected for mating in favour of the smaller rams, *e.g.*, Welsh and Southdown, which were used previously. The cross-bred lambs are bigger at birth. The figures in Table I add support to this view but do not prove the case as many other factors remain unevenly distributed.

Time of Lambing. In Table II the incidence among flocks in which commencement of lambing was delayed until April is recorded. The lower incidence of pregnancy toxaemia in the flocks which lambed later in the year follows the general trend of previous years. One

TABLE I

Type of ram selected for mating	Number of ewes	Cases recorded	Percentage
Ewes in lamb to rams of bigger breed	4,835	421	9·0
Ewes in lamb to Welsh rams	16,632	406	2·4
	21,467	827	

small group illustrates this in Table III : after mating with Welsh rams, ewes of a similar type were run together. No disorder is recorded among lot C which lambed later ; admittedly there were no twins, but 21 cases occurred in ewes carrying single lambs. Pregnancy toxaemia occurred more frequently with a single pregnancy than is generally supposed.

TABLE II

Flocks in which lambing commenced during	Number of ewes	Cases recorded	Percentage
February, 1955	2,769	82	3
March, 1955	16,700	729	4·4
April, 1955	1,998	16	0·8

TABLE III

Lot	Number of ewes	Date lambing commenced	Cases recorded	Lamb crop	Ewes with multiple pregnancies
A	65	10.3.55	17	70	5
B	66	14.3.55	10	67	1
C	30	8.4.55	Nil	29	Nil

Supplementary Feeding

In Table IV data on three groups of ewes are given : ewes fed on hay alone, ewes fed on hay with cereals, and those which received no supplement at all. There was a comparatively high incidence of pregnancy toxaemia, but a lower incidence was noted in the group fed hay and " nuts," and in those which were fed roots alone or roots with hay. Among sheep which were fed hay alone a higher incidence of the disorder was recorded when supplied with more than 1 lb. per day.

TABLE IV

Supplementary feeding	Number	Cases	Percentage
Hay and nuts (calf : ewe and lamb nuts)	1,690	8	0·5
Hay, cereals, etc.	5,617	293	5·2
Hay and roots	2,122	32	1·5
Hay alone	9,693	418	4·3
More than 1 lb. per head per day	1,729	196	11·3
Less than 1 lb. per head per day	7,964	222	2·8
Roots	445	7	1·6
Silage	927	24	2·6
Unthreshed oats (sheaves)...	392	10	2·6
No supplementary feeding...	581	35	6·0
Total ...	21,467	827	3·8

Methods of Feeding. The advantage ascribed to a particular diet cannot be divorced from the method of feeding. Omitting the finer points concerning multiple or single daily supplements and late or early feeding during the day, one major difference in the feeding methods observed throughout the survey was comparatively simple : it concerned supplementary feeding undertaken with free range grazing compared with feeding within the limits of a restricted acreage, reduced for convenience and ease of supervision. The results of this difference are set out in Table V (opposite). A higher incidence of pregnancy toxaemia was noted throughout the groups which were restricted as compared with those which were permitted free range.

Ewes in all flocks which received more than 1 lb. hay per day, alone or with other food, are grouped in Table VI under conditions of free range and restricted grazing respectively. Again, the higher incidence of pregnancy toxaemia is associated with the feeding of greater quantities of hay, the highest case rate occurring within the reduced grazing area.

TABLE VI

	Number of ewes	Recorded number cases pregnancy toxaemia	Percentage cases
More than 1 lb. of hay alone and with other food ...	6,928	478	6·9 (total)
(*a*) With restricted grazing	3,702	452	12·3
(*b*) With free range ...	3,226	26	0·8
Less than 1 lb. hay alone and with other food ...	12,194	273	2·2 (total)
(*a*) With restricted grazing	1,843	136	7·4
(*b*) With free range ...	10,351	137	1·3

Shelter. Food and shelter are equally important for stock wintered outside during periods of climatic stress. The hazard of exposure may necessitate housing for the less hardy breeds, but shelter is important for all sheep ; woods and thickets provide natural shelters which, during severe weather conditions, are eagerly sought before nightfall. Tables VII and VIII illustrate the advantages of shelter, the smaller sample recording differences arising within flocks.

TABLE VII

SHELTER

	Number of ewes	Cases recorded	Percentage
Access to woods ...	1,513	11	0·7
No access to woods ...	19,954	816	4·1

TABLE VIII

DIFFERENCES WITHIN FLOCKS

	Number of ewes	Cases recorded	Percentage
Access to woods ...	523	Nil	0
No access to woods ...	1,302	66	5·0

TABLE V
METHODS OF FEEDING

	Restricted Area			Free Range		
	Number of ewes	Cases	Per cent.	Number of ewes	Cases	Per cent.
Hay and nuts	579	4	0·7	1,111	4	0·4
„ cereals	2,202	275	12·4	3,415	18	0·5
„ roots	261	28	10·7	1,861	4	0·2
Hay alone	2,812	292	10·4	6,881	126	1·8
Over lb. per head per day ...	1,472	187	12·7	257	9	3·5
Under „ „ ...	1,340	105	7·8	6,624	117	1·7
Roots	0	0	0	445	7	1·6
Silage	747	24	3·2	180	0	0
Unthreshed oats	220	10	4·5	172	0	0
No supplementary feeding...	133	27	20·3	448	8	1·8
Total ...	6,954	660	9·5	14,513	167	1·1

Condition of Ewes. It has been realised for a considerable period that ewes which are over-fat by mid-pregnancy are more liable to the disorder later on than sheep within the same flock which are maintained uniformly in less gross or store condition. Both the terms " store " and " fat " offer a wide range of interpretation but nevertheless two distinct methods of management are employed to overcome any predisposition to the disorder. The simpler method requires that freshly-drafted hill ewes be retained on the lowland for one breeding season only, to be disposed of later when fat after weaning. Alternatively, if they are to be retained for further breeding (second season ewes), they are kept either on sparse pasture after weaning or returned for a brief period to enclosed hill grazings and later flushed on better pastures two or three weeks prior to tupping. Table IX has been compiled from the history of flocks which carried both first and second season draft ewes, and little difference is noted in the number of cases which were recorded.

TABLE IX
COMPARISON OF FIRST AND SECOND SEASON EWES
(WITHIN THE SAME FLOCKS)

	Number	Cases	Percentage
First season ewes (fresh from hills)	1,060	103	9·7
Second season ewes (draft hill ewes retained for second breeding season)	1,662	195	11·7

Discussion

The control of rams to ensure later lambing remains a simple preventive measure against pregnancy toxaemia, but it is one which may not be adapted easily to a particular farming programme. Another disadvantage of later lambing may be dystokia, especially in the case of ewes carrying the larger cross-bred foetus ; this condition arises from increased foetal growth following the grazing of better spring herbage.

Considerable progress has been made with the hand-feeding of sheep since the disastrous winter of 1946–7 and the refusal to eat is not commonly encountered. The provision of drinking water was not overlooked : individual diets were varied, some being more generous than others, and cattle were generally awarded pride of place in the farming programme. Many aspects of the supplementary feeding are outside the scope of this short work, but the primary consideration is palatability. Within an area providing considerable variation, further consideration of diet, which is governed by economics, should be related to the nutritional background of a particular flock, bearing in mind that the more intensive methods of pasture management normally provide herbage of narrower nutritive ratio than is obtained under less intensive systems.

Despite the unpredictable range of food value and the composition of Welsh hays, the higher incidence of the disorder (11·3 per cent.) recorded among sheep receiving more hay as against those which were fed less (2·8 per cent.) appears paradoxical. The selection of an arbitrary quantity of 1 lb. of hay requires an explanation. With no other food available, as much as 2½ lb. per head per day would be consumed to appease appetite, but correspondingly less was eaten when grass or foggage was available for both are preferred to hay. The daily restriction of the quantity of hay supplied may result from short supplies or, alternatively, it may be carried out as a deliberate practice. Earlier observations and small field trials have shown that throughout periods of ground snow the general influence of bulk in the diet was to depress the foraging instinct, which in turn induced a state of lethargy and inactivity among sheep which were previously active and alert. On the other hand, reduction of bulk encouraged foraging ; this was then undertaken to appease hunger, especially when a little concentrate was given. Restriction of the amount of hay therefore, since this is the commonest bulky food, remains less a questionable measure of economy than a method of sustaining foraging : it avoids an enforced and sudden change of diet from pasture to dry lot, and simultaneously encourages gentle exercise.

Sheep will not continue to forage unless something edible can be found to reward the effort : included against such an emergency are rushes, grass, heather, foggage, or a crop of succulents especially conserved. Without this latter provision sheep may be better assured of obtaining forage on free range than on a

smaller and relatively crowded area. The incidence of pregnancy toxaemia and allied disorder appears to be greater for sheep kept within a reduced area (9·5 per cent.) than for others afforded free range (1·1 per cent.), apparently irrespective of diet. The difference in incidence on restricted and free range grazing is relatively greater for sheep which are fed more hay (alone or with other food, see Table VI) than for others which received smaller quantities of hay, alone or with other food. This difference is greater where no supplement was fed (20 and 1·8 per cent. respectively) and probably reflects starvation.

In some cases supplementary feeding was delayed or started earlier, but the following figures do not appear in the tables : of 633 recorded cases among 6,281 ewes fed on a reduced area, an incidence rate of 5·5 per cent. was associated with the commencement of early supplementary feeding compared with 13·2 per cent. when this had been delayed. Apart from supplementing the daily supply of food, this earlier start has the further advantage of avoiding a sudden change of diet from grass to dry lot which may be brought about later by a fall of snow overnight. Welsh ewes are capable of withstanding considerable privation if permitted time for adaptation and adjustment. Sudden change on to a lower or higher plane of nutrition is not good husbandry.

The incalculable advantage of natural shelter may be twofold : the relief of climatic stress, and the inducement to forage.

Previous experience of a higher incidence of disorder in second season ewes than in first season draft ewes within the same flock was not borne out in this survey. The explanation may be simple in that draft ewes which had been retained for a second breeding season had had sufficient care taken of them at an early stage to avoid over-fatness. Parry (1956) has reported a lower incidence rate of pregnancy toxaemia from the adoption of this policy, in conjunction with other measures—namely, the maintenance of ewes in store condition during early pregnancy. On the other hand, it may be that other factors outweigh in importance this aspect of condition in predisposing the flock to disorder at a later date. This trend to gross bodily condition arises more on better pastures than on less productive swards ; the better pastures are generally more heavily stocked and grazed, while the poorer pastures carry fewer sheep per acre and are not grazed so bare. Thus, following a heavy fall of snow, there is a greater possibility of a sudden change in diet for the intensively managed sheep. Unless hand feeding has been commenced sufficiently early on such pastures there is little else to eat but dry lot whereas, on less intensively grazed areas, uneaten clumps of herbage break the level surface of the snow and attract attention.

Diet, movement and exercise remain closely interwoven in the genesis of disorder. Holmes (1953) has reviewed the position with regard to experimental reproduction of pregnancy toxaemia which was obtained by fasting or undernutrition. Whilst lack of exercise has been reported frequently as a predisposing factor, there appears to be little, if any, experimental evidence to support this contention not that the lack of evidence invalidates its practical usefulness : Sellers (1954) proclaimed the advantages of exercise, and many other workers have stressed its importance.

McClymont and Setchell (1955–6) identify pregnancy toxaemia tentatively as a hypoglycaemic encephalopathy which is quickly irreversible, and as a physiological accompaniment of undernutrition or starvation in advanced pregnancy, with a greater susceptibility for ewes with a multiple pregnancy. They consider that exercise, which has been so frequently reported by various authors, is probably responsible for the secretion of adrenalin ; this affects cerebral activity, the mobilisation of liver glycogen (if any), and Cori cycle action. Pugh (1954) refers to idiopathic toxaemia in over-fat ewes, associated with lack of exercise, in which an adequate supply of food is generally available.

The role of exercise cannot be regarded as a "red herring," neither can any diet be dismissed as inadequate because of its association with the disorder. A diet should be balanced, although ketosis has in the past encouraged wider nutritive ratios. Further study of seasonal variation appears to be necessary. (In the second survey during the winter of 1956, 19 cases were recorded among 20,607 ewes : in the present survey 827 cases among 21,467 ewes were noted.)

Voluntary exercise or foraging increases the diet and assists in graduating the change of food. Other factors associated with movement include respiratory exchange, its influence on *p*H, and the compensation of the circulation both mechanically and by increased negative thoracic pressure. Sudden changes in the type and bulk of the diet seem to predispose the animal to pregnancy toxaemia. Is this due to lowered digestibility and diminished absorption, with effects comparable to undernutrition ? And, in addition, does exercise assist peristalsis and maintain bowel tone ? Is bowel stasis a symptom of the disorder or a precipitating factor ?

Summary

A survey of the incidence of pregnancy toxaemia in representative flocks of Welsh ewes in Denbighshire,

SUMMARY OF RESULTS

Flock size groups	1–100	101–200	201–300	301–400	401–500	501 & over	Total
Number of flocks	36	27	17	12	6	6	104
" " affected	16	16	10	8	6	6	62
" ewes in group	2,278	4,618	4,445	3,870	2,737	3,519	21,467
Number of cases recorded	61	148	163	275	130	50	827
	(2·7%)	(3·2%)	(3·7%)	(7·1%)	(4·7%)	(1·4%)	(3·9%)
" " " fatal	37	54	52	184	120	5	452
Multiple pregnancies recorded	316	396	382	216	77	416	1,803
Lambing ratio (lambs per 100 ewes) ...	110	105	103	98	93	101	

Enzyme Tests for the Detection of Glucose in Urine

BY

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Introduction

THE commonly employed qualitative tests for glucose in urine, such as those of Benedict or Fehling, involve the chemical reduction of copper salts. This procedure may be facilitated by employing the alkaline copper reagent in tablet form (Gray & Millar, 1953; Varley, 1954). These tests are not specific for glucose and are given by other reducing substances.

The enzyme glucose oxidase is specific for glucose (Froesch & Renold, 1956), and does not affect other sugars or other reducing agents which may be present in urine. Recently, enzyme test papers making use of glucose oxidase have been developed commercially. These tests have been described by Hunt, Gray & Thorogood (1956), and Tunbridge, Paley & Coulson (1956), who evaluated their use in human urine examination. No information was available on their use in the examination of animal urine. It was therefore decided to employ them in addition to Benedict's qualitative test in routine urine analysis.

Description of Test

The impregnated test papers are commercially available in two forms, Reagent Strips,* and Urine Sugar Test Tape.† Both papers are impregnated with glucose oxidase, orthotolidine, and a peroxidase; in addition the Urine Sugar Test Tape incorporates a yellow dye.

When dipped into urine containing glucose and withdrawn, the glucose is oxidised by atmospheric oxygen in the presence of the glucose oxidase. Gluconic acid and hydrogen peroxide are produced. The hydrogen peroxide then reacts with the orthotolidine in the presence of the peroxidase to produce a blue colour. The Reagent Strips, which are originally white in colour, thus show a colour change to blue if glucose is present in the urine. The Urine Sugar Test Tape shows a colour change from yellow, through light green to dark green if glucose is present in the urine. In both tests the optimum colour is obtained in one minute.

Results

The results obtained in routine urine analysis are summarised in Table I. The table shows that 65 specimens of canine urine were examined, all of which were tested with the Urine Sugar Test Tape, but only 43 were tested with the Reagent Strips. Six of the urine specimens in this series gave a trace result with Benedict's qualitative test and negative results with the enzyme test papers; this was presumably due to the presence of non-specific reducing substances other than glucose. Nine of the urine specimens were from known cases of diabetes mellitus and contained varying amounts of glucose; the presence of glucose is shown by a positive reaction to both the Benedict's and the enzyme tests. Of the remaining 50 specimens, 41 were from normal dogs, and nine from dogs suffering from conditions other than diabetes mellitus. Some of these urine specimens contained other pathological constituents including ketone bodies, blood, albumen, and bile elements, but these appear not to interfere with the tests. The table also shows the results of testing three urine specimens from the cat, one from the horse, three from the ox, and one from

* "Clinistix" Reagent Strips, Ames Company (London) Limited.

† "Testape" Urine Sugar Test Tape, Eli Lilly & Company Limited.

A Survey of Pregnancy Toxaemia and Allied Disorder in North Wales, Winter, 1955.—*Concluded.*

Merionethshire, and Montgomeryshire is reported, and some interrelated factors are treated independently.

Managemental factors associated with a higher incidence of pregnancy toxaemia appear to be :—

(*a*) Selection of larger rams for mating ;

(*b*) Earlier rather than later lambing ;

(*c*) Lack of shelter during inclement weather.

The results of supplementary feeding are considered in relation to diet and the method of feeding. The lowest incidence is recorded among sheep receiving concentrated " nuts," followed by those receiving roots. Restriction of the quantity of hay fed alone, or in conjunction with other food, is associated with a lower incidence rate.

During conditions of snow, sheep fed on a reduced grazing area suffered more cases of pregnancy toxaemia than those fed on a free range system. This was probably irrespective of diet. A lower incidence rate was experienced when supplementary feeding was commenced early in pregnancy.

The interplay of sudden change in diet and the influence of bulk on the foraging instinct is discussed, and the suggestion is put forward that bowel stasis is a precipitating factor rather than a symptom of the disorder.

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ANALYSIS OF RESULTS

TABLE I

ROUTINE URINE ANALYSIS

Species	No. of specimens	Benedict's qualitative test	Urine Sugar Test Tape	Reagent Strips	Notes
Dog	9	−	−		Normal urine
	1	±a	−		Other reducing substances present
	1	±a	+		Known diabetics
	1	+	+		,, ,,
	41	−	−	−	Normal urine
	5	±a	−	−	Other reducing substances present
	1	±a	±b	+	Known diabetics
	6	+	+	+	,, ,,
Horse	1	−	−		Normal urine
Ox	2	−	−		Normal urine
	1	−		−	,, ,,
Cat	2	−	−	−	Normal urine
	1	+	+	+	Glucose present
Man	1	−	−	−	Normal urine
	73	73	72	58	

a. ± Benedict's qualitative test indicates a trace of reducing substance.

b. ± Urine Sugar Test Tape indicates smallest perceptible colour change.

TABLE II

DILUTIONS OF GLUCOSE

Solvent	Per cent. glucose	No. of tubes	No. of tubes positive: Benedict's qualitative test	Urine Sugar Test Tape	Reagent Strips
Canine urine	0·03–4·0	15	15	14	15
	0·02	6	0	1	1
	0·01	5	0	0	0
Bovine urine	0·02–10·0	10	10	9	
	0·01	1	0	0	
Human urine	0·03–4·0	15	15	15	15
	0·02	6	1	6	3
	0·01	6	0	0	0
Distilled water	0·03–4·0	19	19	19	19
	0·02	6	0	0	3
	0·01	6	0	0	0
	0·0 (control)	1	0	0	0

man. With the exception of one specimen from the cat which contained glucose these urines were normal. It was found that filtered and unfiltered urine specimens gave identical results.

The incidence of diabetes mellitus in dogs is not high. Bloom & Handelsmann (1937) found two cases in a series of 2,443 dogs, while Malherbe (1947) found five cases in a series of 2,500 dogs. Therefore clinical specimens of urine containing glucose are not easy to obtain. In view of this, various dilutions of glucose in canine, bovine, and human urine, and also in distilled water were examined.

Table II summarises the results of testing these various dilutions of glucose by each of the three methods. The controls for this series are included in Table I, being normal urine specimens; the distilled water control is included in Table II. Table II shows that the results obtained with Benedict's qualitative test are similar to those obtained with the Urine Sugar Test Tape and the Reagent Strips. In these few cases, the end point lay between 0.03 and 0.02 per cent. glucose.

Storage. Both products have been stored, in the manufacturers' containers, under normal laboratory conditions, on the bench and in a cupboard for four months without any deterioration.

Discussion

From the results obtained it would appear that both products are satisfactory qualitative tests for glucose in canine urine. The tests are simple, require no apparatus or source of heat, and may be performed extremely rapidly.

The Reagent Strips are stated by the manufacturers to be only a qualitative test. The manufacturers of the Urine Sugar Test Tape suggest that it may be used as an approximate quantitative test and supply a colour scale for comparison. The quantitative possibilities of this product are at present being investigated as is the sensitivity of both products.

Both Hunt *et al.* and Tunbridge *et al.* state that with the Urine Sugar Test Tape the colour change is from yellow through light and dark green to dark blue. The writer has not recognised the dark blue stage.

Summary and Conclusions

The use of enzyme test papers for the detection of glucose in urine is described. These tests are simple and have given satisfactory results in canine urine examinations when used as qualitative tests.

Acknowledgments.—I wish to thank Messrs. Eli Lilly and Company Ltd. for the supply of the Urine Sugar Test Tape, and Messrs. Ames Company (London) Ltd. for the supply of the Reagent Strips.

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Preliminary Observations on the Relation of *Escherichia coli* to Gut Oedema of Baby Pigs

BY

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ALTHOUGH oedema disease (also known as " gut " or " bowel " oedema) of swine has been recognised for about 18 years (Shanks, 1938), the precise cause of the disease remains obscure (Timoney, 1949, 1950 ; Lamont *et al.*, 1951 ; Schofield & Schroder, 1954, 1955 ; Schofield & Davis, 1955 ; Schofield & Nielsen, 1955). Timoney (1949, 1950 a, b., 1956) reproduced the disease in healthy pigs by injecting supernatant fluid obtained after centrifugation of the intestinal contents of diseased animals. Lamont *et al.* (1951) had little success in transmitting the disease by this method. Schofield and his co-workers also failed to reproduce the disease by feeding ingesta and injecting stomach and intestinal filtrates from fatal cases. Injection of neurotoxins from unknown intestinal anaerobes and *Clostridium botulinum* toxin also failed to reproduce the condition (Schofield & Robertson, 1955). The occurrence of strongly haemolytic *Escherichia coli* faecal cultures from diseased pigs was mentioned by Schofield & Davis (1955) though apparently there were no attempts to reproduce the disease using such cultures. In his most recent note Timoney (1956) also referred to a strain of haemolytic coliform. This culture agglutinated to a high titre with serum from a pig immunised with a preparation from intestinal supernatant fluid from diseased pigs.

Our findings confirm that *E. coli* is implicated in this disease and based on this observation a serum therapy suitable for veterinary practice has already been suggested (Lemcke *et al.*, 1957). Since the completion of this paper, Sojka, Erskine & Lloyd (1957) and Erskine, Sojka & Lloyd (1957) have published an account of their work confirming that specific strains of *E. coli* can cause oedema disease of swine. These authors were also successful in reproducing symptoms of the disease in pigs.

Bacteriological Investigations

A recent outbreak among young pigs in a herd used for nutritional experiments enabled us to make some further observations. The condition occurred with normally reared piglets 7 to 12 weeks old, and with artificially reared piglets three to four weeks old. The clinical signs were inco-ordination of movement and reddening and puffiness of the eyelids. Death usually followed rapidly (five minutes to six hours) and *post-mortem* findings were consistent with the original diagnosis of oedema disease, *i.e.*, clear fluid in the abdomen and gelatinous oedema in the stomach wall and in the mesentery and lymph glands associated with the coils of the colon. In cases which were not immediately fatal, nervous signs persisted for three to four weeks when death usually occurred. A few pigs recovered and were brought to bacon weight but slight inco-ordination of movement persisted, suggesting that the disease had caused some permanent damage. In the first experiments the bacterial flora of nine affected pigs, which were deliberately sacrificed or already dead, was examined. Our attention was drawn to the repeated occurrence of β-haemolytic coliform organisms because although many types of bacteria were isolated (including clostridia and streptococci) coliforms were the only ones which killed mice. The β-haemolytic coliforms were always fatal whereas the non-haemolytic coliforms varied in their ability to kill mice.

A further eight pigs showing symptoms suggestive of oedema disease were obtained from the herd and examined *post mortem* for signs of the disease. The macroscopic appearance of the organs of seven of these pigs confirmed the original diagnosis of oedema disease and showed that the disease had reached different stages of advancement in these animals. It is important to note that β-haemolytic *E. coli* was isolated from all seven pigs, irrespective of the stage of the disease. *Post-mortem* examination of the eighth pig indicated that this animal was not a case of oedema disease and no β-haemolytic *E. coli* were isolated from it.

A total of 141 coliforms was isolated from all the pigs examined : 61 of these were β-haemolytic and gave IMVIC reactions corresponding to faecal type I, although 12 were anaerogenic. All 61 were sensitive to streptomycin and chloramphenicol, but 50 were resistant to chlortetracycline* and oxytetracycline.† The pathogenicity of 16 of the β-haemolytic strains was tested in mice, which were always killed by 0·5 ml. of an overnight nutrient broth culture injected intraperitoneally. In most cases death occurred in four to six hours and the rest of the animals were dead by the following morning (*i.e.*, less than 20 hours). The same amount of culture diluted 1:10 gave variable responses, half to three-quarters of the injected mice dying in 20 to 24 hours. The results of injecting some of these cultures into pigs are recorded in Table I (overleaf).

The pigs injected with the cultures of *E. coli* did not generally show the symptoms of oedema disease even when injection proved fatal. Cultures isolated at *post-mortem* examination of the dead pigs showed β-haemolytic coliforms in the heart blood.

The most important point that arises from Table I is that β-haemolytic *E. coli* isolated from pigs suffering from oedema disease are capable of killing pigs when injected intraperitoneally. The sensitivity of a particular animal appears to depend largely on its age : for instance, in the age group 10 to 17 days, 7 of the 10 injected with 10 ml. culture died, whereas in the age

* Aureomycin.
† Terramycin.

TABLE

Age of pig (days)	No. of pigs	Strain of *E. coli*	Quantity (ml.) of culture injected intraperitoneally	Result
10	2	1	10	Both died (10 days)
10	2	2	10	One died (7 days)
10	2	3	10	One died (8 days)
13	1	4	10	Died (5 hours)
15	2	5	10	One died (5 hours)
17	1	4	10	Died (5 hours)
20	2	3	5	Severe illness, recovery followed.
23	1	2	40	Died (18 hours)
23	1	2	28	Survived
25	2	1	40	Survived
25	2	3	40	Survived
12–17 (Controls)	8	None	10 (broth)	7 survived

group 20 to 25 days, which was injected with larger amounts of culture, only one of the eight injected pigs died.

The pathogenicity of these cultures to mice and pigs may not be exactly parallel. Mice appear to be more susceptible than pigs, although it is difficult to make a comparison because the amounts injected have not been adjusted to the same proportion of the bodyweight in the two species.

Immunological Investigations

It was found that a commercially available polyvalent *E. coli* anti-serum effectively protected mice if 0·1 ml. was administered intraperitoneally two hours before the bacterial injection but not if given three-quarters of an hour after the injection.

When the anti-serum was administered to 20-day-old pigs showing early symptoms of oedema disease most interesting results were obtained. After 10 ml. was given to eight pigs (intraperitoneally or intramuscularly) immediate severe reactions followed which led to death within an hour, although no reaction occurred in healthy animals. Since the reactions resembled those of an anaphylactic shock, the dose was reduced to 0·5 ml. when seven more pigs were treated: all showed immediate shock symptoms which led to the death of three in less than an hour.

The dose was reduced still further and 22 pigs showing oedema disease of varying severity were injected with 0·1 ml. of anti-serum without ill effects. One day later the same pigs each received a further 1 ml. of anti-serum without reacting adversely. The fact that a small dose of anti-serum given 24 hours previously successfully "desensitised" the animals to what would have been a shock-producing dose, provides additional evidence that the shock observed was anaphylactic in nature. To our surprise even the first injection of 0·1 ml. often caused a marked improvement in clinical condition and these animals have now returned to normal although a few still show a slight unsteadiness of gait.

The therapeutic use of the commercial *E. coli* anti-serum in young pigs weaned at 10 to 14 days of age was then attempted. Injections of 1, 5 or 10 ml. of anti-serum at weaning failed to protect the animals and the disease followed the same pattern as in uninjected pigs. Another treatment was that of injecting with three successive doses of 0·1, 1 and 5 ml. at 18, 20 and 22 days of age (Table II).

TABLE II

EFFECT OF *E. coli* ANTI-SERUM INJECTION ON EARLY WEANED PIGS

Group	Injected at (days)	Amounts injected (ml.)	No. of pigs	No. of deaths	Deaths per cent.	Mean age at death (days)
A	Not injected	None	88	31	35	26
B	12	1, 5 or 10	45	15	33	26
C	18, 20, 22	0·1, 1 & 5	133	12	9	26

Table II shows that the percentage of deaths was reduced from 33 to 35 per cent. (Groups A and B) to 9 per cent. (Group C). Although the pigs of Group B received large doses of the *E. coli* anti-serum, they never showed signs of the anaphylactic-like shock. The effectiveness of the treatment of Group C therefore appeared to be linked with the age at which the treatment was given. Under our conditions the optimum age is about 18 days when the first symptoms of the disease normally appear. This is also the time when the animals become hypersensitive to the *E. coli* anti-serum.

That the reaction of the pigs was specific to the *E. coli* antibodies was shown in a further set of experiments in which 0·5 ml. of normal horse serum was injected into three pigs and 4 ml. into six pigs: all these animals showed the clinical symptoms of oedema disease but the serum produced neither improvement nor shock. An antigen preparation was then made by growing six of the β-haemolytic *E. coli* strains overnight, each in 100 ml. nutrient broth, centrifuging and taking up the deposit from a total of 600 ml. of medium in 50 ml. saline. This mixed antigen was injected into 10 more pigs showing oedema symptoms (each pig received 4 ml. intraperitoneally) but no shock resulted. It appears highly probable therefore that the anaphylactic-like shock observed was specifically due to the *E. coli* antibodies since neither horse-serum nor the antigen produced the reaction.

The elicitation of an anaphylactic-like shock by injection of antibody is unusual but Kellett (1935) produced a similar condition in guinea-pigs. This phenomenon which he termed "reversed passive anaphylaxis" was induced by first sensitising the animals with horse-serum (antigen) then obtaining the shock with rabbit-serum containing horse-serum antibody. The reversed anaphylactic-like shock could be produced only if both the antibody and antigen concentrations were optimal. Kellett showed that in order to obtain the shock reaction sufficient antigen had to be present to saturate the tissues. However, if excess antigen was present it remained in the circulatory system and prevented the anaphylactic-like shock. Kellett concluded that it is possible for the shock to occur when the antigen

is fixed to tissue cells and the antibody is in general circulation. Our experimental results support this view : *post-mortem* examinations of the pigs which died following the anaphylactic-like shock showed an inflamed condition of the intestinal wall with capillary dilatation. It is possible therefore that the site of the antigen-antibody reaction is the gut-wall.

Conclusions

This work has shown that certain β-haemolytic *E. coli* strains are virulent to pigs and, considering that they have been recovered from every animal suffering from the disease, it seems highly probable that they are the causative agent. The observed hypersensitivity to *E. coli* antibodies which appears in the natural course of the disease is very unusual but its significance remains obscure. Injection of the cultures although often fatal does not reproduce the typical symptoms, indicating that there remain unknown predisposing factors which allow the establishment of these bacteria in the intestine together with an unusual immunological state of the host. It would be interesting to know if similar conditions exist in human babies suffering from *E. coli* infection of the gastro-intestinal tract.

Summary

Strains of β-haemolytic *E. coli* were always isolated from pigs suffering from oedema disease. Pure cultures of these organisms were pathogenic for mice and pigs.

An *E. coli* anti-serum was found to protect mice if administered before the injection of *E. coli* cultures. This anti-serum was only effective for pigs suffering from the naturally occurring disease if administered at a certain stage of the disease. Under these conditions mortality was reduced from 35 to 9 per cent.

This stage was shown to coincide with the development of a hypersensitivity to *E. coli* antibodies.

Pigs had to be desensitised with small doses of anti-serum to prevent " reversed passive anaphylaxis." The sensitivity of the pigs was shown to be specific to the *E. coli* antibodies.

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The Utility of Certain Romanowsky Stains for Staining Semen Smears

BY

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SEVERAL workers have employed different kinds of compound stains for the study of sperm morphology. Pollak & Joel (1939) recommended azur-eosin, while Lane-Roberts *et al.* (1948), Van Drimmelen (1951), and Hancock (1952) used Giemsa's stain for staining semen smears. Not much work appears to have been done to determine the utility of the common Romanowsky stains like the Leishman's stain, Wright's stain, and Giemsa's stain for staining semen smears. Rao (1953) reported some preliminary data on the suitability of Leishman's, Wright's, and Giemsa's stains for staining semen smears.

Materials and Methods

The semen of the buffalo bull and the bull were used for this study. Very thin smears were made and these were classified into two groups on the basis of their age. Those prepared within one hour prior to staining were designated as fresh smears and those prepared a day or more earlier prior to staining were designated as old smears. Simple air-drying was employed for fixing smears. When required, clearing of smears was done by treating them with a saturated aqueous solution of chlorazene for 15 seconds. Three different techniques of staining were employed, as follows:—

1. *Conventional Method.* In this method the stain is poured over the smear, allowed to act for some time, and smears then washed in water;
2. *Dipping and Blotting Method.* In this method the smear is dipped in the stain solution and immediately withdrawn and dried by careful blotting, and
3. *Ignition Technique.* In this technique the stain dissolved in ethyl alcohol is flooded over the slide, ignited, and the smear flooded with water before the flame goes out and the stain washed in water.

Further details are given separately under each experiment.

Results

For the sake of convenience this investigation was split up into a number of experiments and results obtained with each are presented separately.

Experiment No. 1. Suitability of Leishman's Stain for Staining Semen Smears

Concentrations of 150, 200, and 250 mg. of Leishman's stain in 100 c.c. of methyl alcohol (acetone-free) were employed to determine the optimum concentration of the stain which gives the best results. Similar concentrations of the stain in absolute alcohol were also used to determine whether ethyl alcohol could be a satisfactory substitute for methyl alcohol. In all cases, the stain mixture was heated at 80° C. for about half an hour and the stain used only after two weeks to allow for maximum dissolution of the stain.

When methyl alcohol was used as the solvent, at all concentrations there was slight stain deposition at the bottom, this increasing with the higher concentration of the stain. With ethyl alcohol, 150 mg. completely dissolved but there was stain deposition at higher levels.

Conventional Method. With the conventional method the following techniques of staining were employed:—

1. Concentrated stock Leishman stain was poured on the smears either cleared or uncleared and allowed to act from 1 to 15 minutes;

2. The stock stain was poured on the smears, either cleared or uncleared, allowed to act for half to one minute, after which an equal amount of distilled or tap water was added and the diluted stain allowed to act for periods up to 15 minutes.

Smears were also stained by the dipping and blotting method, direct mixing method, and ignition technique.

Uncleared semen smears, whether fresh or old, gave intense background staining which completely obscured the sperm with both types of stock stain. With cleared fresh or old smears, satisfactory staining was obtained at five minutes' exposure. The sperm heads took a light violet colour while the tails took a deeper reddish violet colour and sperm morphology was quite clear. Longer exposures up to 15 minutes slightly increased the depth of staining. The staining did not vary with the concentration of the stain.

With the second method mentioned above, when smears were stained with the diluted solution for one to five minutes, the results varied with the age of the smears. With fresh, thin smears the background took a deep violet colour, and against the dark background the sperm looked white and almost unstained as with negative stains. One to two minutes' exposure is enough by this method. With old smears results are unsatisfactory by this method. The stain dissolved in ethyl alcohol did not produce the negative effect with fresh smears.

When cleared smears were used, uniformly satisfactory results were obtained with both fresh and old smears at three to five minutes' exposure. The entire sperm took a reddish violet colour.

Dipping and Blotting Method. When fresh smears were stained by this method, results were excellent and preparations were very similar to those obtained with negative stains. The background took a deep reddish colour against which the sperm appeared almost whitish. The stain dissolved in ethyl alcohol also gave similar results. In old smears sperm morphology was obscured by the deep violet background. With cleared smears the sperm took a bright reddish violet colour.

Ignition Technique. With cleared smears, both fresh and old, this technique gave uniformly good results with the stain dissolved in ethyl alcohol. The sperm took a deep bluish violet colour. While staining by this method it is important to run the water onto the smear before the flame goes out to avoid heavy stain deposition which is very difficult to wash off subsequently. Uncleared smears are unsatisfactory by this method.

Trials by the various techniques mentioned above indicated that the depth of staining does not vary with the concentration of the stain. 150 mg. of stain per 100 c.c. of solvent appeared to be quite satisfactory. Ethyl alcohol appeared to be a satisfactory substitute to methyl alcohol, though results obtained with the stain dissolved in the former were slightly inferior.

Experiment No. II. Suitability of Wright's Stain for Staining Semen Smears

Concentrations of 300, 500, and 700 mg. of Wright's stain in 100 c.c. of methyl alcohol (acetone-free) were tried to ascertain the concentration of this stain which gives the best results. Similar concentrations were tried in ethyl alcohol also with a view to determine the suitability of ethyl alcohol as a solvent for this stain. The stain was heated in a water bath at about 80° C. for about half an hour, followed by storage for two weeks before actual use.

In both methyl as well as ethyl alcohol 300 mg. of the stain dissolved completely while at the higher concentrations undissolved stain remained at the bottom with both solvents. The techniques of staining adopted were the same as with Leishman.

Conventional Method. With both fresh and old uncleared smears using the stock stain results were unsatisfactory. But, when the smears were cleared satisfactory results were obtained at five minutes' exposure, the sperm heads taking a light violet colour and the tails a reddish violet colour. With longer exposures up to 15 minutes slightly deeper staining could be obtained.

When fresh, thin, uncleared semen smears were stained by pouring the stock stain over the slide, allowing it to act for half a minute, then diluting it with equal amount of water and allowing the diluted stain to act for one to two minutes, excellent negative preparations were obtained as with the Leishman stain. Old smears stained by the same technique gave unsatisfactory preparations. The stain dissolved in ethyl alcohol did not give this negative effect. Both fresh and old cleared smears gave good results after staining for three to eight minutes by the above method, the sperm looking reddish violet.

With all the techniques mentioned above, staining was not influenced by the concentration of the stain. 300 mg. of stain in 100 c.c. of solvent apears quite satisfactory. Wright's stain dissolved in ethyl alcohol gave results which are similar but slightly inferior to those obtained with that made in methyl alcohol.

Dipping and Blotting Technique. Results with this technique were very similar to those obtained with Leishman's stain, when fresh thin smears were used, the preparations having a negative effect. With cleared fresh and old smears the sperm took a bluish violet colour.

Ignition Technique. With cleared smears the sperm took a light bluish violet colour and sperm morphology was clear. It is very important to flood the slide with water just before the flame starts getting extinguished as mentioned earlier.

Experiment No. III. Suitability of Giemsa's Stain for Staining Semen Smears

Concentrations of 300, 500, 700 mg., and 1.1 gramme of Giemsa's stain per 100 c.c. of a mixture of equal parts of glycerol and methyl alcohol (acetone-free) were tried to determine the suitability of this stain for staining semen smears and the optimum concentration of the stain for satisfactory results. Similar concentrations of the stain in equal parts of glycerol and ethyl alcohol were also employed to ascertain whether the latter could be substituted for methyl alcohol. The stain solutions were handled the same way as mentioned under Leishman's stain before actual use. It was found that at all concentrations of the stain there was undissolved stain at the bottom of the bottles.

Conventional Method. Under this method the following methods of staining were tried:—

1. Staining of uncleared and cleared smears with stock solution for periods ranging from 1 to 15 minutes.

2. Staining of uncleared and cleared smears with stain diluted with distilled water in the ratio of 1:1, 1:5, and 1:10.

This method was unsatisfactory with both fresh and old smears in the uncleared state. With cleared smears the sperm took a bright reddish violet colour after 5 to 10 minutes' exposure.

With cleared smears the 1:1 aqueous dilution of the stain gave clear reddish violet staining of sperm at 5 to 10 minutes' exposure. Aqueous dilutions of the stain higher than 1:1 required proportionately longer staining interval and were not worth adopting.

Dipping and Blotting Method. With cleared smears very satisfactory results were obtained with the 1:1 dilution, the sperm taking a light reddish violet colour. The other concentrations of the stain were unsatisfactory. When the diluted stain is used by this method it is preferable to filter the same before use to avoid stain deposition on the smear.

Ignition Technique. Cleared smears gave satisfactory preparations and the sperm took a reddish violet colour.

By the various techniques of staining tried, it was apparent that 300 mg. of stain per 100 c.c. of solvent was satisfactory. Further, methyl alcohol could be conveniently substituted by ethyl alcohol.

Summary

Studies were made on the utility of certain Romanowsky stains for staining semen smears.

Leishman's Stain. 150 mg. of the stain per 100 c.c. of solvent is considered satisfactory. Methyl alcohol could be substituted by ethyl alcohol satisfactorily as a solvent for the stain. Clearing of smears was found to be generally necessary to obtain satisfactory staining results.

Wright's Stain. Wright's stain gave the same general type of staining as Leishman's stain. 300 mg. of stain per 100 c.c. of solvent is considered satisfactory. Wright's stain dissolved in ethyl alcohol gave the same general type of results as that made in methyl alcohol, though slightly inferior.

Giemsa's Stain. Giemsa's stain also gave satisfactory results as a semen stain but was inferior in this respect to both Leishman's and Wright's stain. 300 mg. per 100 c.c. of solvent is considered satisfactory. Substitution of ethyl alcohol for methyl alcohol in the solvent did not markedly influence staining results.

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TANGANYIKA FREE OF RINDERPEST

Rinderpest has at long last been eradicated from Tanganyika, says a writer in *The African World.*

For the past 40 years Tanganyika has had to bear the burden of responsibility for preventing the spread of this disease southwards, and in 1939 only an inoculation of a million head of cattle in the southern areas checked the disease at the border with Portuguese East Africa, Nyasaland, and Northern Rhodesia. Between 1940 and 1945 more than 24,000,000 inoculations against rinderpest were done in Tanganyika, but none the less 47 outbreaks involving 6,462 deaths were recorded in 1945.

In the following two years nearly 5,000,000 cattle were inoculated. This success, which involved heavy expenditure over a long period, means that the local cattle—some 7,000,000 head—are now safe from the disease; security from infection of the valuable livestock in the Rhodesias and the Union has been increased; hindrances to the free movement of trade cattle in Tanganyika have been removed, and the Veterinary Department can now devote more of its resources to the control of other diseases and to problems of animal husbandry.

The New President of the Royal College

At a special Council Meeting of the Royal College of Veterinary Surgeons, held on June 6th, Mr. G. N. Gould, J.P., M.R.C.V.S., was unanimously, and with acclaim, elected President of the Royal College for the year 1957-8. By custom the name of the junior Vice-President, Professor Bosworth, would have been put to the meeting, but he had asked to be excused, for reasons of domestic anxiety. The profession will unite in sympathy with this eminent veterinary teacher and editor who has thus, owing to the recent illness of his wife, been obliged to delay an honour richly merited. He was re-elected Junior Vice-President.

Mr. Gould, a past-President of the B.V.A., was elected to the R.C.V.S. Council in 1945; became Treasurer in 1954, and Chairman of the Disciplinary Committee in the same year.

He was born in Southampton in 1903, and can look back on an impressive family history within the profession, for both his father and his grandfather were in practice in Southampton before him, and his two sons are both veterinary surgeons in the same practice. He was educated at King Edward VI School, Southampton, and is, to-day, Vice-Chairman of the Governors of his old school. He was President of the Old Edwardians' Association during the war years, and in 1953-4, the year of the school's fourth centenary. He received his professional education at the Royal Veterinary College, where he was awarded numerous class medals, and was the Walley Memorial Prize winner for 1923. He qualified M.R.C.V.S. in 1924.

During the war he was a member of the Live-stock Committee of the Hampshire Agricultural Executive Committee in a personal capacity, and continued to serve until this Committee was recently disbanded.

He was one of the original members of Council of the Animal Health Trust, of which he has always been an active supporter. With a group of farmers he was responsible for the establishment of the Hampshire Cattle Breeders' Society as a non-profit-making organisation, which aimed at providing artificial insemination services for Southampton, the Isle of Wight, and neighbouring areas. He was Chairman of the Organising Committee, which was set up in 1943, and subsequently of the Management Committee, and has remained so throughout. A new centre, which is in process of being built at Lyndhurst at a cost of £75,000, will be completed in the autumn.

He has been for many years veterinary surgeon to the Corporation of Southampton, and honorary veterinary surgeon to the British Goat Society, and to numerous Show Societies.

The B.V.A. has always owed much to his energy. He joined the then N.V.M.A. and the Southern Counties Veterinary Society soon after qualifying, becoming Honorary Secretary to the Society about 10 years later. In 1939 he was invited to join the Survey Committee, and later on was elected to the Council of the B.V.A. as a representative of the Society of Practising Veterinary Surgeons. He was President of the Association in 1945, and Honorary Secretary from 1946 to 1949. Mr. Gould became Chairman of the Technical Development Committee of the B.V.A. in 1946, resigning that office, to the general regret, in 1956. He remains a member of the Committee, for which he has done work of outstanding value.

He was Chairman of the International Congress on Animal Reproduction held at Cambridge in 1956. He was awarded the Dalrymple-Champneys Cup in 1953 and the Victory Medal of the Central Veterinary Society in 1956.

He was appointed a Justice of the Peace of the County Borough of Southampton in 1953; and among his other non-veterinary activities, he is a member of the Royal Southampton Yacht Club, and of Stoneham Golf Club, of which he is a past captain.

He is a member of the Committee of the Thomas Baxter Prize Award, and of the National Farmers' Union; a Founder Member of the Farmers' Company of the City of London and one of the Court of Assistants; a member of the Farmers' Club and, until recently, a member of the Committee. In 1935 he became a liveryman of the Farriers' Company of the City of London, and in virtue thereof a Freeman of the City of London. He was appointed a member of the Committee of Enquiry into the Export of Live Cattle to the Continent for Slaughter by the Ministry of Agriculture in February, 1957—the report being published in April, 1957.

In electing Mr. G. N. Gould to its highest office, the Royal College has chosen as leader a veterinary surgeon of outstanding clinical ability, and one who understands his profession through and through. He is a man of vigour, foresight, and tenacity of purpose, and will bring to his office enviable gifts, both of character and of professional skill.

THE ARGENTINE SOCIETY OF VETERINARY MEDICINE

Readers who have contacts with our colleagues in Argentina will learn with interest that the Society of Veterinary Medicine in that country has just established its headquarters in a new building. The whole cost has been subscribed by the members, and the premises include a library, committee rooms, council chamber, lounge, etc., in addition to offices for the permanent staff. The provisional address of the new headquarters is: Sociedad de Medicina Veterinaria, Hipolito Yrigoyen 850, ler. Piso, Escr. 130, Buenos Aires, Argentina.

Enjoying, as we do, the amenities of our own comparatively new headquarters, we congratulate our colleagues on the acquisition of theirs, and wish them every prosperity.

MR. G. N. GOULD, J.P., M.R.C.V.S.

The new President of the Royal College of Veterinary Surgeons

R.C.V.S. Day

MEMBERS of the profession who read the advance notices of R.C.V.S. Day (June 5th) which were published in this journal will have looked forward to an occasion of quite unusual interest. Certainly the many who were present on the Day itself were not disappointed, for it fulfilled the highest hopes and was, indeed, a milestone in the history of the Royal College. The President and his Officers must have found cause for every satisfaction, and a tribute should be paid to the Registrar and his staff for the organisation of complicated proceedings which went with admirable smoothness from beginning to end.

The Day began with the celebration of a Corporate Service and Commemoration of Benefactors in the Queen's Chapel of the Savoy. It will be remembered that, only a few months ago, through the kindness of the Chaplain, The Rev. Cyril L. Cresswell, C.V.O., M.A., F.S.A., permission was obtained for the use of the Chapel for the Annual Service of the Royal College. At the same time Mr. Cresswell consented to act as Chaplain to the College.

The Chapel is unique in that, as its name implies, it is the personal private possession of Her Majesty The Queen in her right of the Duchy of Lancaster. It is thus a free chapel of which she is both spiritual and temporal overlord and as a result it stands without the ecclesiastical jurisdiction of either Canterbury or York. By Her Majesty's gracious permission it is open to public worship and inspection except on special occasions when it is used by the Royal Victorian Order, of which it was appointed the Chapel by King George VI in a command issued at his Coronation on May 12th, 1937.

The Chapel itself dates back to the establishment of the Manor and Palace of the Savoy in the middle of the 13th century, and the ornamentation of the roof includes the arms of Peter of Savoy, John, King of France, and British monarchs over the centuries, including Queen Victoria. Among its worshippers have been Chaucer and Wycliffe, and it enshrines in unique manner generations of the national history. This was the first occasion when members of the Royal College of Veterinary Surgeons worshipped there as a corporate body, the stewards for the service being members of the Royal College Council.

Every place had been reserved by members of the profession, and Divine Service was conducted by the Chaplain assisted by The Rev. G. A. Willis, B.V.SC., M.R.C.V.S. On this occasion the customary processional entry of the choir and clergy was joined by the Officers of the College and the Registrar, and when they had taken their places the crowded congregation joined in the hymn "Praise, My Soul, the King of Heaven." The order of service, simple and dignified, comprised the Bidding, prayers, several of them composed for the occasion, lesson and anthem, after which the Chaplain gave a brief address.

He began by welcoming the members of the Royal College, expressing his pleasure at being their Chaplain, and suggesting that R.C.V.S. Day, begun in that Chapel, was the public identification of the profession with the Divine Will. The ultimate object of science was to permeate the world with knowledge and truth, and those things were of the essence of Christian teaching. It was the profession's privilege to concern itself with healing and the mitigation of suffering, and those purposes were renewed and dedicated afresh on this occasion.

The Chaplain then drew attention to the history, architectural beauty, and traditions—many of them illustrated by the windows of the Chapel—which were all about them, and reminded the congregation that this was "your own chapel now."

The Annual Luncheon

After the service a formal luncheon was held at the Savoy Hotel, the guest of honour being the Minister of Agriculture, the Rt. Hon. D. Heathcoat Amory.

Immediately after the Loyal Toast had been honoured the President, who presided, read a telegram from Sir Winston Churchill:—

> "I send the Royal College of Veterinary Surgeons of which I have the honour to be an Associate Member my warm good wishes for the annual meeting."

The Minister, in proposing the toast "The Royal College of Veterinary Surgeons," said:—

"I should like to thank you first very sincerely for inviting me to your luncheon to-day, and giving me the honour of proposing this toast of the College. The Royal College and the whole profession rightly enjoy a very high reputation not only in this country, but throughout the world. Only last Easter I again met Sir Thomas Dalling in Rome. As we are aware he is not able to be with us to-day, but I found his prestige undiminished and his formal retirement from F.A.O. very much regretted by everyone there. (Applause.)

"Probably there are far too few people in this country who know of the full scope of the activities of the Royal College. There is your concern, for instance, with Commonwealth veterinary matters, university veterinary education, co-operation with the pharmaceutical industry, and your work for the British Veterinary Codex. No doubt the outstanding reputation of the College in our national life owes much to the wisdom in your choice of Presidents, and I should like, Mr. President, to pay a well-deserved tribute to your work since you have been President. (Applause.) You seem to have graced every possible field of activity in which veterinary surgeons play a part.

"I understand your celebrations this year are intended to emphasise the dedication of the veterinary surgeon to his chosen profession—the unity of the profession and its place in our public life. I am sure that it is very important that the status of the profession should be fully recognised both by the general public and by members of your own profession, and I am glad that you have placed that topic at the centre of your thoughts this year.

"In proposing the toast of the Royal College I should like to say something very briefly about our general policy for the development of the live-stock industry. The veterinary profession obviously has a very important and, indeed, absolutely essential part to play. Our net output in agriculture this year is estimated to be an all-time record, and the farmers' income in which some of you are greatly interested, although it naturally fluctuates from year to year and from type to type and according to the weather and other factors, in aggregate seems to be maintaining itself. There is no doubt whatever that the prosperity of British agriculture is closely bound up with live-stock. Seventy per cent. of our farm sales to-day represent live-stock and live-stock products. There is, of course, a real danger at the present time that we have reached, at any rate for the moment, the limit of production that can be properly encouraged in present circumstances for milk and eggs and pigs, and we now have to concentrate on seeking expanding markets and lower costs.

"Therefore, there is an overriding need for continuing increase in technical efficiency throughout the live-stock industry, and that applies to meat, milk as well as to poultry. I am talking very particularly of live-stock production which is based on our own land, because our dominating aim and our policy must be to maintain the basic fertility of our land. There is some pig and egg production which is really more akin to factory production than it is to farming. Much of that production is no doubt technically very efficient indeed, but unfortunately it makes little contribution to the long-term fertility of our soil, and since it tends to increase the import of feeding-stuffs, it contributes little to the solution of our balance of payments problem.

"This year we have had a record production of milk, and that has been partly due to the kind weather early this year and partly to the steadily increasing efficiency of our dairy farming. No doubt steady development of our attestation programme helped considerably there, and as regards that programme we are now, I believe, on the last lap. I used to say a year or two years ago that I thought we could hope to reach the end of that road within ten years. I think we can hope that within five years or less we can foresee the country entirely free from that trouble.

"The tree testing programme this year is far more ambitious than anything we have attempted before. We have in fact got the accelerator pedal pressed right down and we intend to keep it there. I know that this year's programme will tax the veterinary profession absolutely to the limits, but I know also that you will once again prove equal to the task. The completion of that attestation programme will enable us to lift our eyes to new horizons. It will free some of the resources of your profession and my Animal Health Division, and I think it is right we should begin thinking of the best uses to which those resources can be put.

"On the breeding side I believe we are now coming to the point where we can expect faster progress. Nearly two-thirds of our dairy herds are now artificially inseminated. That means nearly 1¾ million inseminations were carried out in England and Wales during the past year. I know there is room for argument about how big is the improvement we have so far from the use of artificial insemination. I am not competent myself to enter into this technical and intricate field involving daughter-dam comparisons, relative breeding value, contemporary comparisons and bull testing stations; but I am sure that all the work that is being done now on testing the value of bulls used at A.I. stations is indicating the road which we should follow, and should lead to a real quickening in the rate of progress.

"I would emphasise that we have now almost completed the other half of our safe milk policy in restricting the sales of liquid milk, to T.T., pasteurised or sterilised milk. We have now about 90 per cent. of the population drinking one or other of those types of milk and we are making good progress towards the final stages.

"I think it is true that during the last thirty years the attention of scientists and research workers as well as practical farmers has been concentrated on milk production to a greater extent than on meat production; but I believe the scope for meat production calls for much more effort and research than we have put in in the past. That is why I am glad we have, with the full agreement of all sides of the industry, adopted the proposals of the Reorganisation Commission for setting up the Pig Industry Development Authority to focus all the work that needs doing in the development of the type of pig we need to do justice to the type of trade which is available to us in this country. I am anxious that that Authority should be set up this autumn and that it shall get cracking as soon as possible on the challenging task it has, which is to make up about 25 years' leeway in that field. This autumn, too, the new pig progeny testing stations will be coming into operation. I shall formally open the first of them next month, and others will follow quickly.

"At the same time we have pig recording soundly established with 50,000 sows in recorded herds, and in this the great majority of pig breeders will soon be taking part. Of course, the statistics which will be available as a result of the progeny testing and pig recording will not in themselves either breed better pigs or cure diseases, but they will enable the industry to do both those things, and I hope very much that the veterinary profession will do everything it can to encourage farmers to make use of the new tools which are being put at their disposal now.

"On cattle and sheep, perhaps we have even more progress to make than on pigs, and that is why last year we set up an Advisory Committee on meat research, to see if we could bring together all the knowledge and experience of all sides of the live-stock and meat industries so as to make certain improvements in the carcase quality of meat in order that it will meet the requirements of the consumers, and will be fully taken into account by producers and breeders in the live-stock improvement programme.

"Clearly there is a great deal of progress to make before we can feel that we are breeding meat animals

on a scientific basis. We must not forget that 20 per cent. of our insemination to-day at A.I. centres are beef bulls, which shows I think that it is now moving into quite an important place.

"Another point I should like to deal with is the loss caused by the warble fly. I feel that we should be moving faster than we are in dealing with the extensive losses caused by this fly. It is difficult, but quite apart from the set-back in general progress of the cattle affected, the losses run into millions of pounds in damage to hides.

" We have also, I think, to look at the chain of distribution from farms right through to the butchers' shops. That is why I am very anxious that we should improve the average standard of our slaughter-house facilities. You will have seen in the report of the committee set up to report on the export of cattle to the Continent a reference to the fact that American authorities feel that they cannot accept meat from some of our slaughter-houses in this country. I think perhaps that rather more has been read into this statement than the facts really warrant, because some of our slaughter-houses are perfectly satisfactory. But I am afraid that many of them are much less satisfactory than we should like them to be. There is a great deal more to be done in that field, and we intend as soon as possible to introduce new legislation to enable much stricter regulations to be made dealing with the construction and facilities of slaughter-houses.

"We are also hoping to see a further improvement in the standards of meat inspection. I cannot pass without saying a word about this committee to which I have referred, and which is concerned with the question of the export of cattle. It is under the Chairmanship of Lord Balfour of Burleigh, and I am very grateful to your Treasurer, Mr. Gould, for helping to carry out that work by serving on the Committee. At the moment it is engaged in discussion with those concerned on the Continent to see what can be done to ensure that cattle which are exported do not undergo excessive journeys on the Continent, and I hope that I shall be in a position to make a statement before very long now.

"Let me say one word about poultry. We have seen an immense development in the poultry industry in recent years. Our poultry stock improvement scheme has, I think, played a significant part in its growth and development, and I am glad this year that the new progeny-testing stations for poultry come into operation. Here again there is still great scope for further improvement, and the same goes for poultry diseases. We still have not conquered our old enemy fowl pest, although the general situation shows some improvement. After a great deal of thought we scrapped the policy of dividing the country into so-called clean and dirty areas. That policy served its immediate objective, but we think in future it will be better to bring to bear on particular outbreaks the full weight of control measures by imposing a standstill where necessary. Despite set-backs, we still believe we shall conquer this disease in time.

"I have tried to give you some indication of our plans for the development and improvement of the live-stock industry. In every single aspect of that the veterinary profession is closely concerned."

The President's Reply

The President, Professor L. P. Pugh, replied as follows:—

"It would appear, Sir, from your observations, that you must have had a preview of our Annual Report. I, also, have done some homework on the same document. In that study I came to appreciate the mixed feelings of the young American girl who was being prepared for Confirmation when she observed of the Commandments that they certainly contained a long list of ' shalt nots '—but ' they sure put ideas in your head.'

"When I took office my predecessor had already laid the foundation of success in dealing with difficult problems connected with veterinary education in the Irish Republic. My first action, therefore, was to ensure the absolute continuity of that work. I feel certain some of you must have seen a few of the Lancashire stalwarts batting against Yorkshire on a sticky wicket—stone-walling the good-length balls and hitting the loose ones for four. Well, they had nothing on another Lancastrian, my predecessor, Harry Sumner who, batting so to speak on a Dublin wicket that had been cut up somewhat in the earlier stages of the game, played with such steadiness and determination as to bring the match round to a satisfactory ' honours even ' draw. As a result we were able to report to the Privy Council that the Royal College was satisfied that all the educational requirements under the Act had either been fulfilled or were progressing to that end. It is most gratifying to see a further seal put on this happy agreement by the presence here to-day of His Excellency the Irish Ambassador. As for my Council, sure it is a pleasure for us to see the Irish members smiling again—but it was a grand foight while it lasted!

" Further north over the border the Ulster Government has taken a leaf out of Scotland's book and has instituted, in collaboration with the Royal College, a training scheme for certain aspects of meat inspection under the direct supervision of the veterinary authorities. With this principle and practice long-established in Scotland, and Northern Ireland on the way, it seems but a logical step that here in England we should—but there, Sir, I am letting myself be carried away—I definitely decided during my homework that this must be one of the 'Shalt Nots' for to-day. You will have observed, Sir, however, that we played for safety and regaled you with English lamb!

" Here in London last autumn, the Royal College made a decision of considerable moment—to rebuild at Red Lion Square. This decision was activated by major road developments to be carried out by the London County Council in 1959, which will leave the College possessed of a prominent corner site. To arrive at this decision caused us no little anxiety and discussion. There were those on one hand, who cherished a nostalgic feeling for a Queen Anne house in some quiet backwater somewhere near Regent's Park, to try and recapture the graciousness and peace of a by-

gone period for our Council meditations! On the other hand, there were those who had equally strong sentimental views on the retention of the Red Lion Square address—which, after all, has been our home for over a century. They felt, moreover, that a new building would provide the much-needed modern offices, as well as allowing ample space for the development of a Veterinary Research Library. In this latter connexion I am permitted to divulge that the Trustees of the Wellcome Foundation have expressed interest in our proposal to include such a Library in the new building and their willingness to consider making a substantial contribution towards the cost of the same. With our valuable collection of historical and modern veterinary books as a foundation, and that genius for scientific library development, for which the Wellcome Foundation is so justly renowned, I have no doubt whatsoever that we could in a short time build up a Veterinary Research Library second to none in the world.

"I think it appropriate, in view of recent events, to refer here to that highly emotional subject, animal welfare, which at times takes political form and exercises the mind of my Council. It does not seem to be universally understood that the whole purpose of veterinary surgeons is devoted to the welfare of animals, that the patient is, to us, more important than its owner. So it is traditional among us that skilled treatment is not refused because an owner is unable to pay an appropriate fee. If only all the animal welfare societies, and there are many of them, would recognise this fundamental article of our professional creed, occasions to oppose their activities would be few indeed. We Britons are a sentimental people and it is very easy to whip up a public concern about animals; whether it be myxomatosis or the export of cows! But I wonder how many of the subscribers to the bodies created for charitable animal welfare purposes know of the disputes, rivalries, even antagonisms which exist between them, wasteful of time, effort and money? I declare quite categorically that the Royal College of Veterinary Surgeons is ready and willing, as it always has been, to co-operate fully with any properly and fairly conducted animal welfare society, to ensure that animals of the poor shall receive the same standard of treatment as those owned by people who are better off.

"Finally, Minister, I am going to do something which I have generally been told not to do—to take a sentence out of its context and use it in another—and what is more, I am taking it out of a speech made by the Joint Parliamentary Secretary to your Ministry (Mr. J. B. Godber).

" In a recent discussion in the House, he strongly advocated a line of action to a certain society which would involve the part-time use of the services of veterinary surgeons, which has been used so successfully by other animal welfare societies. He finished his appeal by saying that if the society in question follows his suggestion, ' The Ministry will help all it can.' It is this last sentence which I am taking out of that context because this phrase represents to me so aptly the attitude of mind of the Ministry whenever these days we go there with our problems. I would say, Sir, that since the last war, the Royal College, and through it the veterinary profession, has been increasingly made to feel by the permanent members of your staff that our work is of national importance and that we contribute, through agriculture, in no small measure to the general welfare of the State and that always in this work of ours we are made to feel that ' the Ministry will help all it can.'

" On this note I would like to say how much we appreciate the honour and pleasure of your visit here to-day and to thank you for the very felicitous terms in which you have proposed the toast of the Royal College of Veterinary Surgeons." (Prolonged applause.)

The toast of the guests was proposed by the Chief Veterinary Officer, Mr. J. N. Ritchie, C.B., and the Vice-Chancellor of Bristol University, Sir Philip Morris, replied.

So many notable members of the profession were present at luncheon that space precludes a list of names. Among the many distinguished guests, in addition to the Minister and Sir Philip Morris, were:—

The Irish Ambassador, His Excellency Mr. C. C. Cremin; Lord Lucas of Chilworth; Lord Merthyr; Mr. E. R. Callender, President of the B.V.A.; Mr. A. J. Champion, M.P.; Mr. P. H. Collick, M.P.; Sir James Henderson Stewart, M.P.; Mr. A. Hurd, M.P.; Commander J. F. W. Maitland, M.P.; Mr. A. Moyle, M.P.; Dr. Barnett Stross, M.P.; Mr. W. G. Agnew, Clerk to the Privy Council; Sir Alan Hitchman, Permanent Secretary to the Ministry of Agriculture; Sir Richard Manktelow, Deputy Secretary; Mr. W. C. Tame, Under Secretary; Mr. C. P. Quick, Assistant Secretary; Dr. J. F. Lockwood, Vice-Chancellor of London University; Sir Philip Morris, Vice-Chancellor of Bristol University; The Rt. Hon. H. U. Willink, Master of Magdalene College; Sir Henry Dale, Chairman of the Trustees, The Wellcome Trust; Mr. A. Hobson, Secretary, Royal Agricultural Society of England; Mr. T. H. Turney, Chairman of the Farmers Club; Sir Cleveland Fyfe, Master, The Worshipful Company of Farmers; Mr. J. A. Flynn, President, Irish Veterinary Council; Sir Weldon Dalrymple-Champneys; Sir L. Watkinson; Sir James Scott Watson; The Rev. Cyril L. Cresswell; and the Rev. G. A. Willis.

The Annual General Meeting

The third and last item of the day's proceedings was the Annual General Meeting which was held at the Royal College, with the President in the Chair. The meeting was very well attended, and every place in the Council Chamber was taken. At the beginning of the meeting Professor Pugh read two telegrams, as follows:—

"I send the Royal College of Veterinary Surgeons of which I have the honour to be an Associate Member my warm good wishes for the annual meeting.—Winston Churchill." (Applause.)

"The Irak Veterinary Association wishes to associate itself with the spirit of your day of dedication and celebration.—Chadwick, President." (Applause.)

The Registrar then read the auditors' certificate concerning reappointment in Council, and the President declared Dr. Montgomerie, Mr. Anderson, Professor Lovell, Mr. Mitchell, and Mr. Atkinson as elected members of Council.

The Registrar then read the names of members appointed by the Privy Council and the Universities

and the President declared them duly elected members of Council.

The Annual Report and Statement of Accounts were the next item on the agenda. Their adoption was proposed by Mr. Ritchie and seconded by Mr. Sumner. They were unanimously agreed.

The Presentation of Awards

The John Henry Steel Memorial Medal

THE PRESIDENT: "The first is the John Henry Steel Memorial Medal 'to perpetuate the memory of an earnest worker so that his example may incite others, and to benefit the profession by encouraging and rewarding merit,' and it gives me great pleasure to announce that Mr. W. C. Miller has been awarded this medal.

"William Miller and I share the same love for a thoroughbred, and it was therefore a very great pleasure to me, Mr. Miller, when the Committee selected you as one of the recipients of the Steel Memorial Medal this year for the work you have done for this animal which is still not quite extinct. I think it will be a race, whether the thoroughbred becomes extinct before the veterinarian who knows the thoroughbred becomes extinct.

"I am sure that your pupils and your friends all over the country will share our very great pleasure in your being awarded this prize." (Applause.)

Mr. Miller returned thanks in appropriate terms paying tribute to the colleagues who had worked with him.

The President then went on: "Wallace Stableforth and I share another liking together, that for trees and gardens—trees especially, but as far as I know the Award is not made for that affection. I doubt whether there are many people in this country who have not at some time or other consulted Dr. Stableforth. The quality of his work and the work done under his direction at Weybridge is a byword amongst us, and I can think of no one to whom this Award could better be given than Wallace Stableforth.

"In presenting the Steel Memorial I should like to add my own recognition of all the help that I have had from him over the years." (Applause.)

Dr. A. W. Stableforth thanked the President.

The Livesey Medal presented to "the person who has made a contribution to the prevention and/or alleviation of pain or fear in animals," was the next award. It was made to Dr. P. G. Croft and Dr. T. M. D. Roberts. In making the presentation the President said: "I gather, Miss Croft, that you and Dr. Roberts vied with one another to know who was the more surprised that you had been picked upon by the Committee to receive this prize. Those of us who know of the work which you have done in connexion with euthanasia of small-animals know how well both you and Dr. Roberts have deserved the prize, and I have the greatest possible pleasure in presenting you with the Livesey Medal." (Applause.)

The Francis Hogg Prize was next presented to Dr. L. W. Hall of the University of Cambridge, after which there followed the presentation of Honorary Fellowship to Mr. Henry Sumner. Professor Pugh addressed Mr. Sumner as follows: "Henry Sumner, as a Past-President, you are well aware that besides a fair amount of ordinary work in connexion with the office of President, there are very many pleasant duties which one has to perform. I can assure you that no duty has given me more personal pleasure than the fact that I was able to propose you for the Honorary Fellowship of this Royal College, and that the Council unanimously and with acclamation agreed to that proposal.

"I would say that it is not for any single piece of work that you receive this Honorary Fellowship, although we could easily have done that if required. It was for your long and distinguished efforts on behalf of the general practitioners of the profession, work which is unspectacular and so often hidden under a bushel, but work which we on the Council were well aware of. I never felt more certain in our decision, and my pleasure in being able to present you with this scroll is greatly enhanced by the fact that your gracious wife is present."

Presentation of Fellowship Diplomas

THE PRESIDENT: "We come now to the presentation of the Fellowship Diplomas. The word Fellowship has many meanings changing with the circumstances in which it is used but all implying acceptance into or within a community of people.

"In this age of acute social consciousness, emphasis seems to be placed more on the rights and privileges so acquired than on the duties of service within the group—whether it be a club, a trade union, or a nation; and even the term comrade has come to have a political, aggressive connotation rather unpleasant to most people. So it is well to remind ourselves that, in our small community, service takes priority over privilege.

"The award of a Fellowship is a mark of approval by one's peers, an indication that the recipient has laboured successfully beyond his ordinary duties as a Member to 'observe and comply with the acts, charters and by-laws of the College.' He has made an advance in knowledge and presented us with the fruits of his work and thought; which is to serve us all. I want to make quite clear my attitude that it is not those who come here to-day to receive recognition who are in our debt but rather we in theirs.

"What is it that makes people work beyond what is needed to make a living? There are very many motives, and seldom single. It is profoundly true that the really happy man is one who enjoys his work and, in that sense, most of us are in a privileged class of people. But there is more than enjoyment behind the sustained and disciplined seeking and recording and thinking to produce a thesis. I like to believe that the element of self is diminished in the urge to contribute something to one's profession and one's science and I like to hope that our new Fellows will not lose that drive to serve, which, after all, is a mark of Royalty.

"Mr. Registrar—will you read out the names singly that each new Fellow present may receive his scroll and that I may shake him by the hand?"

New Fellows

These among the following gentlemen who were present were then individually introduced. The titles of their theses are added for purposes of record:—

Dr. S. E. Piercy, B.SC., "Studies in Bovine Malignant Catarrh."

Mr. M. R. McCrea, B.V.SC., "The Artificial Rearing of Pigs."

Dr. J. D. Biggers, B.SC., "The Assay of Oestrogens by the Intravaginal Route of Administration."

Mr. T. H. Ellis, "Observations of Some Aspects of Obstetrics in the Ewe."

Mr. M. N. Menon, B.V.SC., "Canine Spirocerosis and its Treatment with Special Reference to Transthoracic Surgery of the Oesophagus for Enucleation of the Parasitic Nodule."

Mr. R. M Smith, "Observations on the Colon of the Domestic Ruminants."

Mr. L. C. Vaughan, "A Study of the Clinical and Pathological Aspects of Intervertebral Disc Protrusion in the Dog."

Mr. G. H. Arthur, M.V.SC., "A Study of Some Aspects of Descent of the Testicle and Cryptorchidism in Domestic Animals."

Mr. M. D. Murray, B.SC., "The Distribution of Breeding Populations of Mammalian Lice on Their Hosts."

A vote of thanks to the President, proposed by Dr. Montgomerie, was carried with loud applause.

After the Annual General Meeting tea was served, and a number of those present took the opportunity to inspect a most interesting exhibition of historic manuscripts etc. from the College archives. We hope to publish an article describing some of these exhibits in a forthcoming number of THE VETERINARY RECORD.

News and Comment

ARTIFICIAL INSEMINATION OF CATTLE

The Minister of Agriculture has made new regulations* governing the artificial insemination of cattle in England and Wales. They come into operation on July 1st, 1957.

The principal changes are as follows:—

(a) Semen stored by the former owner of a bull may be used for inseminations in his own herd without licence;

(b) the transfer of semen by the former owner of the bull from which it is collected to the new owner of that bull may be made without licence;

(c) where bulls standing at artificial insemination centres die or are removed from those centres, semen collected from them prior to death or removal may not be used except with the Minister's consent;

(d) the Minister may direct that the semen of any bull shall not be sold or distributed.

The need for revision has arisen because of developments in the use of the deep-freeze method of storing semen which have taken place since the earlier regulations were made.

All existing licences for artificial insemination centres will be replaced as soon as possible by licences issued under the new regulations.

* The Artificial Insemination of Cattle (England and Wales) Regulations, 1957 (S.I. 1957/948).

CONTRAVENTION OF ANTHRAX REGULATIONS

For contravening the anthrax regulations, Joseph Tyson, farmer, of Meadows Farm, Parkgate, was fined £2 at Neston magistrates' court recently. The prosecution stated that Mr. Tyson reported to the police that one of his pigs had died during the night, and he was served with an Anthrax Form "A" which restricted his premises. He was told that the pig must not be touched until it had been seen by the local veterinary inspector for the Ministry of Agriculture; but when the inspector arrived he found that the pig's entrails had been removed.

JAPANESE SCIENTIST FOR F.A.O.

Dr. Junji Nakamura, from Japan, a world-famous virologist, took up an assignment for F.A.O. in Nigeria, West Africa, in April, 1957. He will investigate the possible ways of producing a vaccine meeting the requirements of the different breeds of cattle, some of which are highly susceptible. He has brought with him vaccines from Japan, and he will compare these with local vaccines in use. Furthermore, Dr. Nakamura will demonstrate serological techniques, such as the complement fixation test for rinderpest developed recently in his laboratory.

Dr. Nakamura is on leave from his post as Director of Institute and the Chief of the Research Department at the Nipon Institute for Biological Science. He is well-known for his research on adaptation of rinderpest virus to rabbits and subsequently to eggs to immunise highly susceptible breeds of cattle. Dr. Nakamura's avianised, lapinised rinderpest virus was used very successfully in Korea and Japan. Workers from different countries have demonstrated that bovine rinderpest virus can be easily adapted to the rabbit, but among the several strains of lapinised rinderpest virus the Nakamura No. III strain is the most "fixed" in character. It has become sufficiently attenuated through serial passage through rabbits to be able to be used as a safe immunising agent for the cattle and buffalo in most areas of Korea, China, Thailand, India, Pakistan, Egypt, Kenya, Viet Nam, and Ethiopia.

Dr. Nakamura is also well-known for his research work on fowl plague and more particularly Newcastle disease, hog cholera, and encephalitis in goats. In 1941 he was awarded the "Hakushi," the highest scientific degree awarded in Japan.

PERSONAL

Births

MARKHAM.—On June 11th, 1957, to Rosemary, wife of Keith Markham, M.R.C.V.S., of "Downside," North Street, Langport, Somerset, a daughter, Jane Frances.

WRIGHT.—On June 3rd, 1957, to Wendy and Michael Wright, M.R.C.V.S., of Grove House, Ryles Park Road, Macclesfield, a daughter, Susan.

Marriage

THOMSON—EDWARDS.—At St. Lawrence's Church, Frodsham, Cheshire, on Saturday, June 1st, Thomas Thomson, M.R.C.V.S., of Strathblane, Stirlingshire, to Kathleen Joan Edwards of Bunbury, Cheshire.

COMING EVENTS

June

19th (Wed.). Meeting of the Essex Veterinary Society at the Farm Live-stock Disease Research Station, Animal Health Trust, Lilystone Hall, Stock, Essex, 2.30 p.m.

20th (Thurs.). Meeting of the Western Counties Veterinary Association at the Bristol Hotel, Newquay, 2.15 p.m.

Meeting of the Lancashire Veterinary Association at the Midland Hotel, Manchester, 8 p.m.

21st (Fri.). Ordinary General Meeting of the South Wales Division in the Cambrian Hotel, Saundersfoot, 2.30 p.m.

General Meeting of the South Wales Division at the Cambrian Hotel, Saundersfoot, Pembrokeshire, 2 p.m.

26th (Wed.). Summer Meeting of the Sussex Veterinary Society in the Zoological Gardens, Regent's Park, London, 2.30 p.m.

27th (Thurs.). Meeting of the Lakeland Veterinary Association at The Hydro, Windermere, 6 p.m.

Meeting of the British Small-animal Veterinary Association at the Stork Hotel, Liverpool, 8.30 p.m.

Annual General Meeting of the North of Scotland Division at Chapel Croft Cattle Breeding Centre, Bucksburn, 2.30 p.m. Business meeting at Craibstone Men's Hostel, 4.15 p.m.

July

3rd (Wed.). Summer Meeting of the A.V.T. & R.W.s (Northern Region) at The School of Agriculture, University College of North Wales, Bangor, 10.45 a.m.

5th (Fri.). Annual General Meeting of the Lincolnshire and District Division at the George Hotel, Grantham, 2.15 p.m.

August

25th-31st. 75th Annual General Meeting and Congress of the B.V.A. at Cambridge.

BRITISH VETERINARY ASSOCIATION QUARTERLY MEETINGS IN LONDON

Wednesday, July 10th, at 7, Mansfield Street, London, W.1.

10.00 a.m. Veterinary State Medicine Committee.
11.30 a.m. Farm Live-stock Committee.
2.15 p.m. Home Appointments Committee.

Thursday, July 11th, at 7, Mansfield Street, London, W.1.

10.00 a.m. Parliamentary and Public Relations Committee.
11.30 a.m. Small-animals Committee.
12.00 noon Finance Sub-committee.
2.15 p.m. General Purposes and Finance Committee.

Friday, July 12th, at Connaught Rooms, London, W.C.2.

10.30 a.m. Council Meeting.

R.C.V.S. Examinations

June

27th (Thurs.). M.R.C.V.S. Written Examinations.
28th (Fri.). M.R.C.V.S. Written Examinations.

July

1st (Mon.). M.R.C.V.S. Practical and Oral Examinations commence (Panels "A" and "B").

THE REGISTER OF VETERINARY SURGEONS

Under the provisions of Sec. 25 (4) of the Veterinary Surgeons Act, 1948, and S.I. No. 1150 of 1953, the name of Thomas Gerald Fay, Department of Agriculture, Wynyard, Tasmania, Australia, was restored to the Register of Veterinary Surgeons on June 11th, 1957.

HOLIDAY EXCHANGES

Germany

Boy of 15¾ from Selsingen, bei Bremervörde, seeks exchange with the son of a British veterinary surgeon between July 1st, 1957, and August 15th, 1957. Family comprises himself, parents, and a sister of 11 years of age.

Boy of 18 from Nordendorf, Schwaben, would like to arrange an exchange with a boy from Southern or Central England for six weeks between July 5th and August 15th, 1957. Family comprises himself, parents, and a sister of 21 years of age.

STRAY HAT

A Christys' "Cavalier" hat (from Basticks of Southampton and Winchester) handed in to the cloakroom at the R.C.V.S. before the Annual General Meeting remains unclaimed. Will the owner kindly write to the Registrar, who will be pleased to arrange for its return?

FOOT-AND-MOUTH DISEASE

The area described in the schedule below shall cease to be an Infected Area for the purpose of preventing the spread of foot-and-mouth disease on June 20th, 1957:—

IN THE COUNTY OF KENT

The Boroughs of Margate, Ramsgate and Sandwich.

The Petty Sessional Division of Thanet.

In the Petty Sessional Division of St. Augustine: The parishes of Hoath and Chislet.

In the Petty Sessional Division of Wingham and Sandwich: The parishes of Stourmouth, Wickhambreaux, Preston, Ash, Wingham, Staple, Woodnesborough and Worth and so much of the parish of Ickham and Well as lies to the north of the main road (A257) running from Canterbury to Wingham including the said road.

ADDRESSES OF DISEASE INFECTED PREMISES

Anthrax

Fife. Lochhead Farm, East Wemyss (June 4).
Isle of Wight. 5, Bucks Cottages, Shorwell, Newport (June 1).
Kent. Elm Tree Farm, Sellindge, Ashford (June 1).
Lanarks. Heathfield Farm, Muirhead, Glasgow (June 4).
Leics. Fields Farm, Barlestone, Nuneaton (May 31).
Yorks. Bents Farm, Braithwaite, Summerbridge, Harrogate (May 31); Stone Stile Farm, Thornbury, Bradford (June 5).

Fowl Pest

Aberdeen. The Old Manse, New Pitsligo; Backhill of Braiklay, Tarves; Post Office, Tarves (June 4).
Lancs. Clifton Poultry Farm, Liverpool Road, Longton (June 1); Moorthorpe, Drumacre Lane, Longton (June 2); Sunnyvale, Mere Brow, Tarleton (June 3); Marshes Lane, Mere Brow, Tarleton; Sunnyside, Hall Lane, Longton; Manor Hey Farm, Mere Brow; Rosegrove, Catforth (June 4); Nutters Platt Farm, Pope Lane, Jutton (June 5).

Swine Fever

Hants. Fleetlands, Off Warsash Road, Titchfield, Fareham (June 3); The Piggeries, Heathcote Road, Bordon (June 5).
Herts. Writtles, St. James Road, Goffs Oak, Waltham Cross (June 3). 6, Brickfield Cottages, Buckland, Buntingford (June 4).
Somerset. West Monkton Orchard, West Monkton, Taunton (June 4).
Suffolk. The Hollies, Botesdale (June 5).
Surrey. Long Acres, Woodlands Road, Little Bookham, Great Bookham, Leatherhead (June 3); Lower Birtley Farm, Brook, Godalming; Wapshott Farm, Bullbeggars Lane, Horsell, Woking (June 5).
Sussex. Old Slaughterhouse Piggeries, Highland Avenue, Horsham; Cullinghurst, Cowden (June 4).
Warwicks. Pear Tree Farm, Warstock, Birmingham, 14 (June 5).
Worcs. Hollingshead Farm, Holt Heath, Worcester (June 3).

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the B.V.A.

Intraperitoneal Injections

Sir,—In the correspondence of your issue of February 9th, 1957, I suggest that Mr. John Stratton dismisses the intraperitoneal route in the dog too summarily. In this office, since 1952, general anaesthesia has been induced in dogs and cats by the intraperitoneal route over 600 times with consistent success. The dose employed is nembutal gr. i per 5 lb. bodyweight or Sagatal 1 c.c. per 5 lb. bodyweight. The ability to judge weight comes with practice. A long, sharp, stout needle is essential, for cats 1½ inches and dogs 3 inches. The site of injection is in the flank in front of, and below, the external angle of the ilium. There is complete lack of resistance to the injection which goes in extremely readily. There has never been any evidence of injury to any internal organ, and only two cases have died which could be directly attributed to the anaesthetic: a young virgin fox-terrier bitch which died immediately, probably due to an idiosyncrasy, and a peke bitch, due to an overdose. Usually anaesthesia takes place in seven minutes in either dog or cat, but if the onset is slow it is worth waiting up to 20 minutes before taking further action. Rarely, in the fat animal, the injection is lost in the peritoneal fat, but on the few occasions this happens the operation should be delayed for 24 hours.

By far the greatest number of operations are spayings, with more bitches than cats; but the technique is also used for castration of cats and the usual traumatic and obstetrical work encountered in a fair-sized community. Should anaesthesia be insufficiently deep a further injection can easily be made.

In conclusion, may I emphasise that the intraperitoneal route for the administration of anaesthetics in small animals is an efficient, practical method of the greatest use to anyone who is single-handed or who prefers working alone.

I have pleasure in acknowledging my indebtedness to "Veterinary Anaesthesia" by Professor J. G. Wright.

Yours faithfully,
S. L. TREVOR.

The Veterinary Department,
Ndola,
Northern Rhodesia.
May 28th, 1957.

Testosterone Implants for Alopecia in Spayed Cats

Sir,—It may be of interest to record the effects of subcutaneous implants of testosterone propionate in two neutered female cats, as although this form of treatment is relatively common for skin and coat ailments in neutered males, there seems to be little information about its use for these conditions in spayed cats.

One was a five-year-old long-haired black cat which was given a subcutaneous implant of 25 mg. of testosterone propionate primarily to treat an imperfectly united metacarpal fracture, and secondarily some miliary eczema over the spinal region and a thin coat. The result was a spectacular improvement in the cat's coat which became long, thick, and glossy in a week. The fracture eventually healed up well, but the miliary spots were resistant to treatment. This did not seem to cause the cat any discomfort.

The other case was that of a seven-year-old long-haired black cat which had undergone ovarohysterectomy during operation for the relief of protracted dystocia about 18 months before being presented for examination, with alopecia on the abdomen, over the spinal region, and on the lateral and posterior aspects of the thighs. Other treatment having proved ineffective, the animal was similarly implanted with 25 mg. of testosterone propionate, bearing in mind the effect this hormone had on the hair growth of the former cat. Hair then grew again on the alopecic areas and after nine weeks the coat was normal.

Yours faithfully,
W. E. M. PHILLIPS.

4, Lake Road,
Fairhaven,
Lytham St. Annes,
Lancs.
June 6th, 1957.